



University of
Nottingham
UK | CHINA | MALAYSIA



國科大杭州高葶研究院
Hangzhou Institute for Advanced Study, UCAS

UNNC – HIAS, UCAS Doctoral Training Partnership

It's essential that you have contacted the UNNC and/or HIAS supervisors before applying.

Formal applications should follow the instructions in '[How to apply](#)' section.

Research areas

1. Physics and Optoelectronic Science & Technology
2. Chemistry and Materials Engineering
3. Ecological Environment Science and Engineering

Available PhD topics (updating)

PhD topic	Effects of molecular junction structures on electron transport in single-molecular based electronics composed of $M_2(RCOO)_4$ units
HIAS Supervisor	Prof. Shaoming Huang
UNNC Supervisor(s)	Prof. Benchan Tang
Short introduction & description of the PhD project	<p>Fabrication of molecular junctions and understanding the relationship between their structures and electron transport properties are of primary importance to the development of applicable molecular electronic devices. However, previous studies mostly focused on directly synthesized organic short molecules, whose molecular and electronic structures are difficult to control precisely. This leads to difficulties in establishing clear relationships between structures and electron transport properties of molecular electronics. In this project, we plan to fabricate a series of metal-organic hybrid molecular wires on electrode surfaces by stepwise assembly methods using $M_2(RCOO)_4$ ($M = Rh, Ru, Pd, Cu, Zn, \text{etc.}$) units, of which the composition, structure, length and energy level can be precisely controlled. Their electronic properties will be characterized by electronic spectroscopy, electrochemical analysis and so on. Furthermore, the electron transport behavior will be investigated by various methods, such as conductive probe atomic force microscopy. Quantitative factors including electron transfer rate constant, zero-distance electron transfer rate constant, distance attenuation factor, and rectification ratio will be measured. We expect to discover the effects of molecular wire compositions and electronic structures on the electron transport behavior, in order to set up a quantitative relationship between the structures and long-range electron transport properties of the molecular wires. The electron transport mechanism through these molecular wires will also be studied. The knowledge gained from the proposed project would provide deep understanding on regulation of electron transfer properties of such molecular wires, which is critical for the future development of molecular electronic devices with desired properties.</p>

Contact points	Informal inquiries may be addressed to Prof. Shaoming Huang (smhuang@ucas.ac.cn) and Prof. Benchan Tang (Bencan.Tang@nottingham.edu.cn).
-----------------------	--

Potential Supervisors

UNNC		
For more UNNC potential supervisors, please visit: https://www.nottingham.edu.cn/en/science-engineering/people/academic.aspx		
Profile	Research area(s)	Email
Bencan Tang	2	bencan.tang@nottingham.edu.cn
Di Hu	2	di.hu@nottingham.edu.cn
Shahid Iqbal	2	Shahid.Iqbal@nottingham.edu.cn
Tengwen Long	3	tengwen.long@nottingham.edu.cn
HIAS, UCAS		
Profile	Research area(s)	Email
Chenqi Xu	Life Science and Biology	cqxu@sibcb.ac.cn
Chunlai Li	1	lichunlai@mail.sitp.ac.cn
Chunyang Liao	3	cyiao@rcees.ac.cn
Fengli Qu	2	qufengli@him.cas.cn
Gongli Tang	2	gltang@mail.sioc.ac.cn
Guanhai Li	1	ghli0120@mail.sitp.ac.cn
Haiyan Zhang	3	zhanghaiyan@ucas.ac.cn
Hangrong Chen	2	hrchen@mail.sic.ac.cn
Jia Li	2	jli@simm.ac.cn
Jianbo Shi	3	jbshi@rcees.ac.cn
Jianghao Yu		jhyu@itp.ac.cn
Jianjie Fu	3	jjfu@rcees.ac.cn
Jiyan Liu	3	liujy@rcees.ac.cn
Juan Du	1	du@ucas.ac.cn
Liang DENG	2	deng@sioc.ac.cn
Lingxiangyu Li	3	lingxiangyu.li@ucas.ac.cn
Luonan Chen	Bioinformatics and AI Applications	lnchen@sibcb.ac.cn
Ning DAI	1	ndai@mail.sitp.ac.cn
Ou WU	1	wuou@ucas.ac.cn
Qinghua Zhang	3	qhzhang@rcees.ac.cn
Qunfang Zhou	3	zhouqf@rcees.ac.cn
Taihao Li	Intelligence Science and Technology	lith@ucas.ac.cn
Weibo Yang		yweibo@simm.ac.cn

Xiaheng Zhang	2	xiahengz@ucas.ac.cn
Xiangiang Mi	2	87033588@qq.com
Yan Feng	1	yfeng@ucas.ac.cn
Yawei Wang	3	ywwang@rcees.ac.cn
Yechun Xu	2	ycxu@simm.ac.cn
Yi Du	2	duyi@cnic.cn
Yifei Jiang	2	jiangyifei@him.cas.cn
Yong Tang	2	tangy@sioc.ac.cn
Zhili Zuo	2	zlzuo@ucas.ac.cn
Zhoujian Cao	1	zjcao@amt.ac.cn